

[0001] This application is a continuation of application Serial No. 09/651,808, filed August 30, 2000, ~~pending~~ now U.S. Patent 6,602,117, issued on August 5, 2003.

[0006] A new type of polishing pad, known in the art as a fixed-abrasive pad, may be used to polish or planarize layers formed on a semiconductor substrate. Fixed-abrasive pads, which may be embodied in the conventional, web, or belt formats, are typically formed from an acrylic material and embedded with particles of abrasive materials. The pad and embedded abrasives effect the mechanical part of CMP processes. During use of the fixed-abrasive pad to planarize or polish one or more layers on the surface of a semiconductor device during fabrication thereof, the abrasive material is exposed at a polishing surface of the pad. Some of the abrasive material may also be leached out of the pad. As a result of the inclusion of abrasive particles in the pad, the chemical slurries that are used to effect the chemical portion of ~~chemical-chemical~~ chemical-mechanical polishing or chemical-mechanical planarization need not include the abrasives that are often required when conventional, abrasive-free pads are employed.

[0037] In use of polishing system 50, one or more semiconductor device structures 10 having one or more layers thereon that are to be chemical-mechanical polished are secured to substrate support 44. If necessary, fixed-abrasive polishing pad 40 is also secured to polishing apparatus 42. Slurry 30 is introduced by slurry applicator 47 onto one or both of semiconductor device structure 10 and fixed-abrasive polishing pad 40. Once slurry 30 has been applied to fixed-abrasive polishing pad 40, one or both of semiconductor device structure 10 and ~~fixed-~~fixed-abrasive polishing pad 40 are substantially continuously laterally moved (e.g., rotated or vibrated or otherwise moved side-to-side) and brought into frictional contact with one another so

as to effect the CMP process. For example, when a web format or belt format polishing apparatus is employed, the apparatus may process semiconductor device structure 10 (i.e., rotate semiconductor device structure 10 around the axis of a support therefor), while the polishing pad remains substantially stationary.